6-11-99



## CLAIMS

1. A method of forming a conductive line comprising the following steps:

forming a polysilicon layer;

forming a silicide layer against the polysilicon layer;

providing a conductivity-enhancing impurity within the silicide layer; and

providing the polysilicon layer and the silicide layer into a conductive line shape.

2. The method of claim 1 wherein the silicide comprises a metal selected from the group consisting of tungsten, titanium, molybdenum and cobalt.

3. The method of claim 1 wherein the steps of forming the silicide layer and providing the conductivity-enhancing dopant therein together comprise:

depositing a metal together with the conductivity-enhancing impurity on the polysilicon layer; and

reacting the metal with the polysilicon to form the silicide layer having the conductivity-enhancing impurity therein.

4. The method of claim 1 wherein,

the step of forming the silicide layer comprises chemical vapor depositing silicide on the polysilicon layer; and

the step of providing the conductivity enhancing impurity comprises chemical vapor depositing the conductivity-enhancing impurity *in situ* with the chemical vapor depositing of the silicide.

5. The method of claim 1 wherein,

the step of forming the silicide layer comprises chemical vapor depositing a tungsten-comprising silicide on the polysilicon;

the step of providing the conductivity-enhancing impurity comprises chemical vapor depositing the conductivity-enhancing impurity *in situ* with the chemical vapor depositing of the tungsten-comprising silicide; and

the conductivity-enhancing impurity comprises a group III or a group V element.

6. The method of claim 5 wherein the step of chemical vapor depositing the conductivity-enhancing impurity comprises utilizing a precursor compound selected from the group consisting of $PH_3$, $AsH_3$, and diborane.

7. The method of claim 1 wherein the conductivity-enhancing impurity is provided to a concentration of at least about 1 x $10^{18}$ ions/$cm^3$ within the silicide layer.

8. The method of claim 1 wherein the step of forming the silicide layer and the step of doping the silicide layer together comprise:

providing a target comprising a metal, silicon and the conductivity-enhancing impurity; and

sputtering of the target to form the silicide layer and the conductivity-enhancing impurity within the silicide layer, the silicide layer comprising the metal.

9. The method of claim 1 wherein the step of providing the conductivity-enhancing impurity comprises:

ion implanting the conductivity-enhancing impurity into the silicide layer after forming the silicide layer.

10. The method of claim 1 wherein the polysilicon layer is doped with the conductivity-enhancing impurity, and wherein the step of providing the conductivity-enhancing impurity comprises:

out-diffusing the conductivity-enhancing impurity from the doped polysilicon layer into the silicide layer.

11. The method of claim 1 wherein the step of providing the conductivity-enhancing impurity comprises:

gas phase chemical doping of the silicide layer.

12. The method of claim 1 wherein the conductive line is a wordline.

13. A method of lowering the resistivity of a metal-silicide layer comprising doping the metal-silicide layer with a Group III dopant or a Group V dopant.

14. The method of claim 13 wherein the dopant is provided to a concentration within the metal-silicide layer of at least about $1 \times 10^{18}$ ions/cm$^3$.

15. A method of forming a conductive line comprising the following steps:

forming a polysilicon layer;

forming a silicide layer against the layer of polysilicon;

providing a conductivity-enhancing impurity within the silicide layer; and

after providing the conductivity-enhancing impurity within the silicide layer, subjecting the silicide layer to a processing step of over 850°C for at least 10 seconds.

16. The method of claim 15 wherein the forming the silicide layer comprises depositing a metal layer over the polysilicon and reacting the metal layer with the polysilicon, and wherein the conductivity-enhancing impurity is provided within the metal layer prior to the reacting the metal layer with the polysilicon.

17. The method of claim 15 wherein the forming the silicide layer comprises depositing a metal layer over the polysilicon and reacting the metal layer with the polysilicon, and wherein the conductivity-enhancing impurity is provided within the metal layer after the reacting the metal layer with the polysilicon.

18. The method of claim 15 wherein the conductivity-enhancing impurity is implanted into the silicide layer.

19. The method of claim 15 wherein the conductivity-enhancing impurity is provided to a concentration within the silicide layer of at least about $1 \times 10^{18}$ ions/$cm^3$.

20. A method of forming a conductive line comprising the following steps:

forming a polysilicon layer;

forming a silicide layer against the layer of polysilicon;

providing a conductivity-enhancing impurity within the silicide layer; and

subjecting the silicide layer to a processing step of over 850°C for at least 10 seconds while exposing the silicide layer to an oxygen-comprising atmosphere.